

## All solid photonic band-gap fibres

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We report a simple all-solid photonic band-gap fibre [1]. The fibre (Fig. 1) was formed using two commercially-available silicate glasses. The transmission spectrum (Fig. 2) shows several low-attenuation windows, which stand out from the background by more than 30dB over just a few centimetres of fibre. The measured dispersion over two transmission bands has shown anomalous group-velocity dispersion in the transmission bands despite the large normal dispersion of the material. The bandgap formation in all-solid photonic band-gap fibres is attributed to anti-resonances of the high-index strands in the cladding.

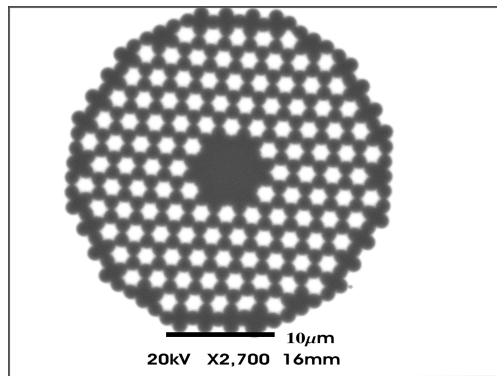


Fig.1 Back-scattered electron image of a fibre sample. The white area is high-index glass.

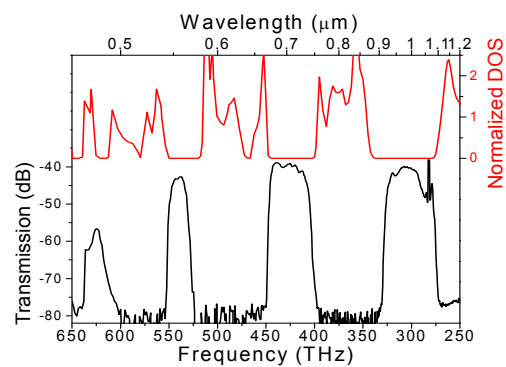


Fig.2 Measured transmission spectrum (lower curve) of a fibre sample (20cm long, 1.79μm pitch) and the computed normalized density of photonic states (above).

- [1] F.Luan, A.K.George, T.D.Hedley, G.J.Pearce, D.M.Bird, J.C.Knight, and P.St.J.Russell, *OPTICS LETTERS*, 29, 2369 (2004)